REMARKS

INTRODUCTION

Claims 1-15, 20, and 23-27 were previously pending.

Claims 1-15, 20, and 23-27 stand rejected.

Claims 28 and 29 are added herein.

Claims 1-15, 20, and 23-29 are now pending and under consideration.

Claim 23 is amended herein.

No new matter has been added.

REQUEST FOR INTERVIEW

Applicant requests an in-person interview with the Examiner at the Examiner's earliest convenience. Applicant suggests that due to the complex nature of the technology at hand, a personal interview would be help Applicant and Examiner find agreement on the differences between the present invention and the currently cited art, and how those differences might be clarified in the language of the claims.

REJECTIONS UNDER 35 USC § 103

Claims 1-16, 20, and 23-27 stand rejected under 35 U.S.C. 103(a) as being obvious over He et al. (U. S. Patent Number 6,671,259) ("He") in view of Zisapel et al. (U. S. Patent Application Pub. No. US 2005/0022203 A1) ("Zisapel").

Claim 1

Claim 1 recites "a plurality of load balancing domain name servers (DNS-LBs) deployed in a physical proximity from which the actual network latency of the clients may be measured". As seen later in the claim, the physical proximity is proximity with a DNS-ISP: "the DNS-LBs each sending mapping information ... relating the DNS-LB's IP address to an IP address of the

DNS-ISP to which the DNS-LB is in physical proximity". This proximity between the DNS-ISP and the DNS-LB allows "the actual network latency of the clients to be measured". This is a natural result of the "clients connecting through an ISP having a domain name server (DNS-ISP)". In sum, claim 1 recites that the DNS-LB is in physical proximity to the client's DNS-ISP, which allows the DNS-LB to "experience" the network latency of the client.

The rejection compares this feature to paragraphs 0036 to 0038 of Zisapel. However, Zisapel does not discuss or suggest physical proximity to the DNS-ISP such that actual network latency of the clients may be measured. As shown in Figure 1A of Zisapel, LB1 16 is in proximity to servers S1 ... Sn. LB1 is separated from client 26 by Internet 14. Looking also to Figure 2C, client 26 has no server in proximity that would allow such server to measure network latency *of the client 26* (note that latency is not symmetric; a client transmitting to a server may have a different latency than when the server transmits to the client).

Paragraphs 0036 through 0038 of Zisapel discuss how different load balancing servers can balance load by shifting client requests from one cluster to another. For example, LB1 may receive a request from client 26 and decide that since no servers for LB1 are available the request should be forwarded to LB2, which has available servers. LB2 handles the request and changes the sender's-address field of its response to LB1's address (para. 0036, lines 15-20). The only mention of proximity in the cited paragraphs is in paragraph 0038, which states that "LB1 preferably maintains a proximity table 54 indicating subnets and the best server farm site or sites to which requests from a particular subnet should be routed". However, this only suggests proximity between *server farm sites and subnets*, not between clients and load balancers (LBs).

Zisapel itself has features which show that physical proximity it not required or even expected. As indicated in paragraph 0044, Zisapel must *determine* the closest site for client 26 to be redirected to. As noted in paragraph 0040:

> A "network proximity" may be determined for a

> requestor such as client 26 with respect to each load balancer/ server farm by measuring and collectively considering various attributes of the relationship such as latency, hops between client 26 and each server farm, and the processing capacity and quality of each server farm site. To determine comparative network proximity, LBI, LB2, and LB3 preferably each send a polling request 58 to client 26 using known polling mechanisms.

To take into account client latency, Zisapel teaches load balancers (LBs) polling clients to determine their latency. This makes sense because the LBs are in physical proximity to the server farms that they service. This would not make sense if Zisapel's LBs were in physical proximity to measure network latency of clients. In other words, there would be no reason for Zisapel to determine a closest site for client 26 if an LB had physical proximity from which the actual network latency of the client could be measured. It is well known in IP networking that packets communicated from A to B will not necessarily travel the same path as packets communicated from B to A.

Claim 10

Claim 11 recites "clients connecting through an ISP" and "the DNS-LB capable of determining server performance from a location physically proximate to the ISP's point of presence". The rejection does not mention or address this feature. The rejection simplifies the feature as being "the DNS are placed in physical proximity from which the actual network latency of the clients may be measured" (Office Action, page 7, top). However, neither Zisapel nor He show an ISP point-of-presence.

A point-of-presence is a term of art well known to those of ordinary skill in the art of network technology. For example, Wikipedia defines it to mean "[a]n Internet point of presence is an access point to the Internet." Similar definitions abound. Applicant requests either explanation of where point-of-presence of an ISP (and physical proximity of a DNS-LB), or withdrawal of the rejection.

Claim 12

Claim 12 recites "the DNS-LB located in a physical proximity from which the actual network latency of the clients may be measured". As discussed above, the LB servers deployed near server farms in Zisapel cannot measure actual client network latency. It is well known that in TCP/IP networks latency is often asymmetric. Some communication links may intentionally have greater bandwidth in one direction as opposed to another. As noted in the TCP/IP FAQ (www.itprc.com/tcpipfaq/faq-1.htm#what-ip):

> IP provides a Connectionless Unacknowledged Network Service, which means that its attitude to data packets can be characterised as "*send and forget*". IP does not guarantee to actually deliver the data to the destination, nor does it guarantee that the data will be delivered undamaged, *nor does it guarantee that data packets will be delivered to the destination in the order in which they were sent by the source*, nor does it guarantee that only one copy of the data will be delivered to the destination.

The Free Online Dictionary of Computing notes the following in regard to connectionless protocols (which includes IP): "The data communication method in which communication occurs between hosts with no previous setup. Packets sent between two hosts may take different routes." Applicant respectfully submits that it is well known that IP routing on the Internet is generally dynamic in nature and when two hosts are communicating the direction of network travel can have a substantial impact on the apparent latency. In other words, latency from host A to host B will often differ from the latency from host B to host A. Applicant respectfully requests reply from the Examiner should the Examiner disagree with this assertion.

Claim 20

Claim 20 recites "clients connecting through Internet service providers (ISPs) at a point of presence (POP)", and "load balancing domain name servers (DNS-LBs) in a physical proximity from which the actual network latency of the clients connecting to the ISP POPs may be

measured". The rejection cites He, col. 5, lines45-49 as teaching an ISP POP. This portion of He makes no mention of an ISP POP.

Claims 23 and 26

Claim 23 recites "the identified load balancing server situated at a physical proximity from which the actual network latency of a client connecting to the ISP DNS server may be measured". Claim 26 recites "each load balancing server situated at a physical proximity from which the actual network latency of a client connecting to at least one of the ISP DNS servers may be measured". Only Zisapel is cited as teaching this feature. As noted above, the LB server in Zisapel is proximate to the *server farm*. Zisapel's LB is not proximate to the client 26 and/or the ISP DNS that the client uses. Zisapel has no way to measure actual client latency.

CONCLUSION

The present application is in condition for allowance. A prompt action to such end is requested.

Should any fees be required in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-0463.

If the Examiner believes a telephone interview would be helpful to expedite prosecution, the Examiner is invited to contact Applicant's undersigned representative at the telephone number below.

Respectfully submitted,

Microsoft Corporation

Date: 31 Oct 2007 By: /James T. Strom/

James T. Strom, Reg. No.: 48,702
Attorney for Applicants
Direct telephone 425-939-0781

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October 31, 2007 Christine Hartness

Date Christine Hartness